Pheasant and Northern Bobwhite Quail Status in Michigan, 2003

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The Michigan Department of Natural Resources (DNR) annually monitors pheasant (*Phasianus colchicus*) distribution and abundance using summer brood surveys and harvest surveys. Harvest is monitored using mail surveys of randomly selected small game license buyers and a separate survey of volunteer cooperators. From 1949 through 2002, pheasant crowing surveys were also conducted each spring. In 2003, however, crowing surveys were discontinued, because trend information could be obtained through summer brood surveys. Also, the introduction of Sichuan pheasants (*P.c. strauchii*) to Michigan during the mid-1980's complicated interpretation of crowing survey results because Sichuan pheasants crowed less frequently than pheasant subspecies previously established in Michigan (Luukkonen et al. 1997).

The DNR monitors northern bobwhite quail (*Colinus virginianus*) distribution and relative abundance using whistling surveys. Harvest is monitored using mail surveys of randomly selected small game license buyers and volunteer cooperators. This report summarizes the results of these surveys and discusses the upcoming hunting season.

METHODS

Pheasant Mail Carrier Brood Survey

The pheasant brood survey is conducted during a 2-week period from late July through early August by cooperating rural mail carriers. Mail carriers stationed at post offices in southern Michigan record the number of pheasant broods, chicks, and lone hens observed each day along their mail delivery routes during the survey period. The same routes (N=1,341) are asked to be run each year so that a comparison can be made between years. An index of pheasant brood abundance is calculated as the number of broods observed per ten carrier-days (one mail carrier observing one day = one carrier-day). In Michigan, the brood index has been a good indicator of fall pheasant abundance and harvest (Luukkonen 1998*a*).

Luukkonen (1998*a*) reported a strong correlation between the brood index and estimates of pheasant harvest derived from mail surveys from 1955-1996. However, relatively low brood indices were documented during 1985-2002 (Figure 1), and there was concern that the predictive model including all years would do a poor job of estimating harvest during years of lower pheasant abundance. Therefore, we constructed a new predictive model for harvest using only the data for 1985-2002. Harvest predictions were developed from the model for the regular season only, excluding the December hunt which started in 1993. Harvest surveys indicated that about 9% of the pheasants harvested in Michigan were taken during the December hunt period during recent years. Thus, the harvest prediction for the December hunt was calculated based on the same proportion. In addition,

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the harvest estimate for 1986 was considered an outlier and therefore excluded from analysis. The estimate for 1986 was about 30% lower than the estimates for 1985 and 1987, while the brood index increased each year from 1985-1987.

Pheasant/Quail Hunter Cooperator and Mail Surveys

Cooperator surveys are based on a group of volunteer hunters who record numbers of hours hunted and pheasant and quail flushed each day. Data obtained from cooperating hunters is summarized as the number of pheasant and quail flushed per hour of hunting. Although final estimates of hunting effort and harvest come from a mail survey of randomly selected hunters, flush rate surveys from pheasant cooperators provide an early indication of harvest. Hunters may participate in the cooperator survey by contacting the Lansing Wildlife Division office or by printing and completing the cooperator form which can be accessed at www.michigan.gov/dnr.

Quail Whistling Survey

The quail whistling survey is conducted on established routes in southern Lower Michigan. Routes were established in areas of known quail populations. Routes are run once a year on calm mornings (winds < 12 mph) during June 1-15. This period includes the seasonal peak in whistling call activity among male bobwhite quail. Surveys begin at sunrise and observers make 3-minute stops to count the number of individual quail whistling at each of the 20 stops along routes. Routes are approximately 20 miles long.

RESULTS

Pheasant Mail Carrier Brood Survey

Mail carriers returned 686 useable survey forms. Comparison of 537 routes conducted in both 2002 and 2003 revealed no statistically significant changes in the brood index (paired t=0.491, P=0.62). In 2003 mail carriers observed 0.42 broods per ten carrier-days; in 2002 they observed 0.38. Mail carriers observed an average of 0.38 broods per ten carrier-days on all routes in 2003 (Figure 1). There were also no statistically significant changes in the number of chicks observed per brood (paired t=1.06, P=0.29) between years. In 2003 mail carriers observed 4.6 chicks per brood; in 2002 they observed 3.9 chicks per brood.

Michigan hunters may take an estimated 109,000 pheasants during the regular season based on the predictive model that includes brood and harvest survey data from 1985-2002 (Figure 3). Hunters may take an additional 10,800 pheasants during the December season.

Pheasant/Quail Hunter Cooperator and Mail Surveys

Records were available from 81 cooperators, who combined to hunt over 1,300 hours in 2002. Cooperators flushed an average of 1.00 rooster per hour and 1.47 hens per hour while hunting. These flush rates are similar to the average flush rates of 0.92 roosters and 1.23 hens per hour that were reported in 2001. The highest average pheasant flush rates from 2002 were reported in many counties in central lower Michigan as well as in the thumb region (Appendix A). Hunters harvested approximately 111,000 pheasant during approximately 265,000 hunter-days (one individual hunting during a day=one hunter-day) in 2002 (B. Frawley, MI DNR, personal communication).

Cooperators reported flushing an average of 0.25 quail per hour while pheasant hunting in 2002. In 2001, the average flush rate was also 0.25 quail per hour. The highest average quail flush rates in 2002 were reported in Calhoun and Shiawassee counties (Appendix C). Preliminary estimates of hunter harvest indicate that about 3,000 birds were taken across the state during approximately 11,000 hunter-days in 2002 (B. Frawley, MI DNR, personal communication).

Quail Whistling Survey

A total of 23 quail whistling surveys were completed in 2003. The overall mean index was 4.4 quail heard per route. Comparison of 21 routes conducted in both 2002 and 2003 revealed no statistically significant changes from 5.1 to 4.5 quail heard per route (paired t=-0.47, P=0.6). For routes completed in both 2002 and 2003, 6 routes decreased, 8 routes increased, and 7 did not change. The highest number of quail heard on a route in 2003 was 24, compared to 44 in 2002.

Quail are usually most abundant in 22 counties in southern Michigan (core quail range). Quail counts ranged from 0 to 24 per route in these 22 counties in 2003 (Table 1). A mean of 4.0 quail was heard per route in this core area compared to 5.0 in 2002. The highest counts have been in St. Clair county for the past 10 years.

DISCUSSION

The decline of pheasant and quail populations in Michigan is well documented (Figures 1 and 2). Ring-necked pheasants, quail, and other grassland species have declined on Michigan Breeding Bird Survey (BBS) routes during the period 1966-2002 (Sauer et al. 2003) as well as on DNR survey routes. Gormley and Luukkonen (1998) found that Michigan quail whistling surveys and BBS indices were significantly correlated. Data from DNR breeding indices over the past 10 years indicate pheasant abundance has been relatively stable, however at a much reduced abundance from historic highs during the 1950's.

Changes in agricultural practices, land use changes, and weather factors may have all contributed to the pheasant decline. Areas such as southeastern Michigan, which once contained some of the best pheasant habitat in the state, have experienced extensive human development and loss of grasslands. Additionally, pheasant abundance appears to decline as the amount of tree cover exceeds about 10% of the landscape (Luukkonen 1988*b*). The amount of forest cover in southern Michigan increased by about 40,000 acres per year from 1980 to 1993, therefore an increase in forest cover appeared to have been a major contributing factor in the decline of pheasants (Luukkonen 1988*b*).

Belyea (1991) noted that state and federal land management programs have not reversed the downward trend of pheasant numbers. However, private land initiatives implemented by the DNR, Natural Resources Conservation Service, and private conservation organizations, may prove beneficial to landowners wishing to improve habitat conditions for pheasants (Sargent and Carter 1999). The implementation of Michigan's Conservation Reserve Enhancement Program (CREP) may positively impact pheasant populations as well as other species. Under CREP, private landowners in 3 priority watersheds agree to enroll eligible lands in the program for 10 to15 years and establish prescribed conservation practices such as filter strips, wetland restoration, wetland creations, windbreaks, and riparian buffers. Approximately 47,000 acres are currently enrolled in this program, and about 15,000 acres of warm season prairie grasses have been planted in these areas (M. Sargent, MI DNR, personal communication). Because pheasant populations seem to respond to habitats on a broad, landscape scale, habitat improvements made on a few isolated sites are often ineffective in increasing pheasant abundance (Luukkonen 1998*b*). However, because CREP is a focused initiative on a broad watershed scale, pheasant abundance may increase due to the habitat improvements made through this program. For more information about this program, please see www.michigan.gov/mda.

Quail abundance and distribution in Michigan is limited by many factors. Severe winter weather, changes in land-use and farming practices, and increased use of biocides are all cited as possible factors that have contributed to the long-term decline of Michigan quail (Gormley and Luukkonen 1998). Quail are currently at relatively low population levels based on whistling surveys conducted by the DNR since 1958. The average number of quail heard on routes declined markedly since the

mid-1970s (Figure 2). Ice storms and severe winters in the late 1970's adversely affected the quail population (Janson 1976, Fouch 1978). Since 1979, the Michigan quail index has fluctuated but has not reached levels reported from 1958 to 1976 (Figure 2).

Habitat and land use changes in Michigan will likely prevent quail from recovery to historic population highs of the mid-1950s. However, quail could benefit from habitat improvement projects. Private landowners are the key to significantly increasing quail numbers, because 97% of Michigan quail range is privately owned. Landowners wishing to improve their land for wildlife will find the publication "Managing Michigan's Wildlife: A landowner's guide" an excellent resource. This publication is also available online at www.michigan.gov/dnr.

2003 Hunting Season Forecast

Pheasant

The 2003 pheasant hunting season should be similar to last year. Results from the summer brood survey indicated that the pheasant population has remained relatively stable between years. Michigan hunters may take an estimated 109,000 pheasants during the regular season based on the predictive model that includes survey data from 1985-2002 (Figure 3). An additional 10,800 birds may be taken during the December season. Preliminary analyses indicated that in 2002, approximately 62,000 hunters harvested about 111,000 pheasants while spending about 265,000 hunter-days (B. Frawley, MI DNR, personal communication).

While pheasant numbers are far below the historical high levels of the 1950s and 1960s, they still are widely distributed in southern Lower Michigan and in some areas of the Upper Peninsula (Belyea 1991). Some of the highest pheasant numbers are reported in the central and thumb regions (Appendices A and B).

Pheasant season is open from October 10-31 in Zone 1, October 20-November 14 in Zones 2 and 3, and December 1-15 in portions of Zone 3. Information on zone boundaries may be found at www.michigan.gov/dnr or in the 2003 Michigan Hunting and Trapping Guide. Only males may be harvested and the bag limit is 2 per day, 4 in possession. The season limit is 8 pheasants.

Quail

Although patchy in distribution and abundance, quail can be found throughout southern Michigan. Preliminary analyses indicated that last year approximately 2,500 hunters harvested about 3,000 quail while spending about 11,000 hunter-days (B. Frawley, MI DNR, personal communication). Hunters may again take an estimated 3,000 quail in 2003.

Quail season is open from October 20-November 11. Based on the regional abundance of quail, the counties listed in Table 2 are open to quail hunting in 2003. The bag limit is 5 per day, 10 in possession.

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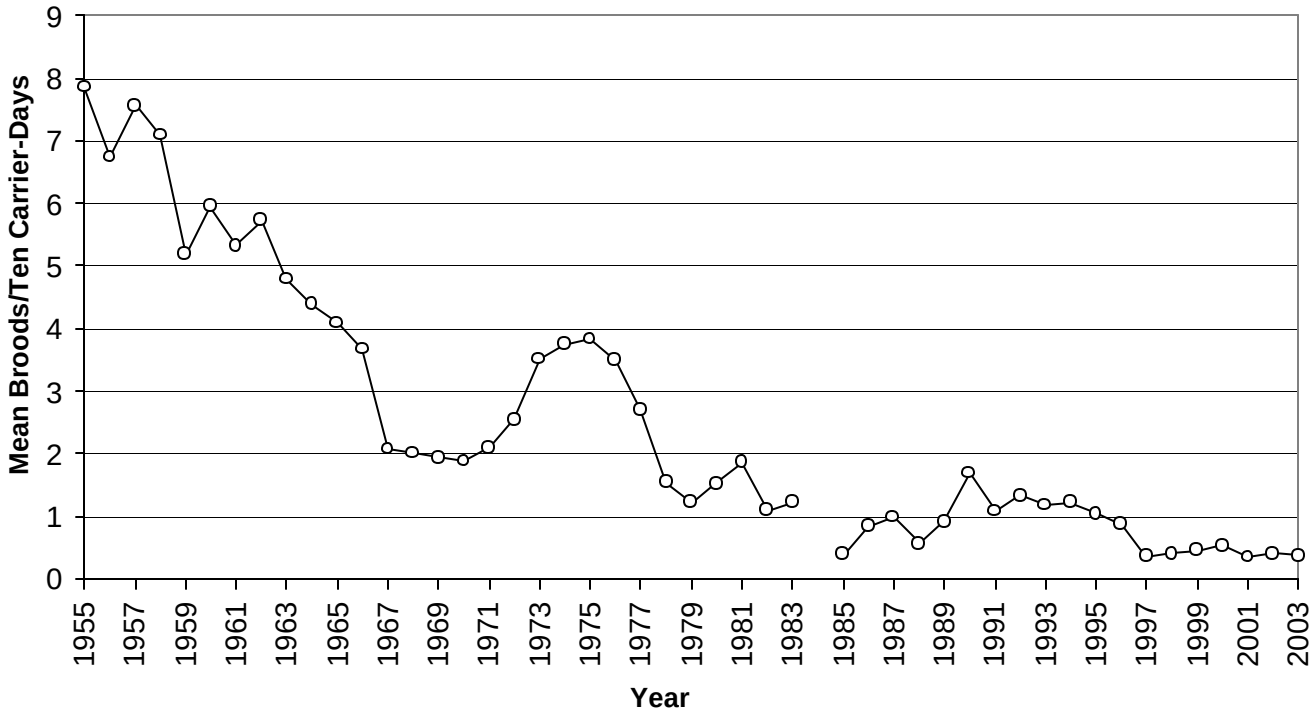


Figure 1. Pheasant brood indices in Michigan, 1955-2003.

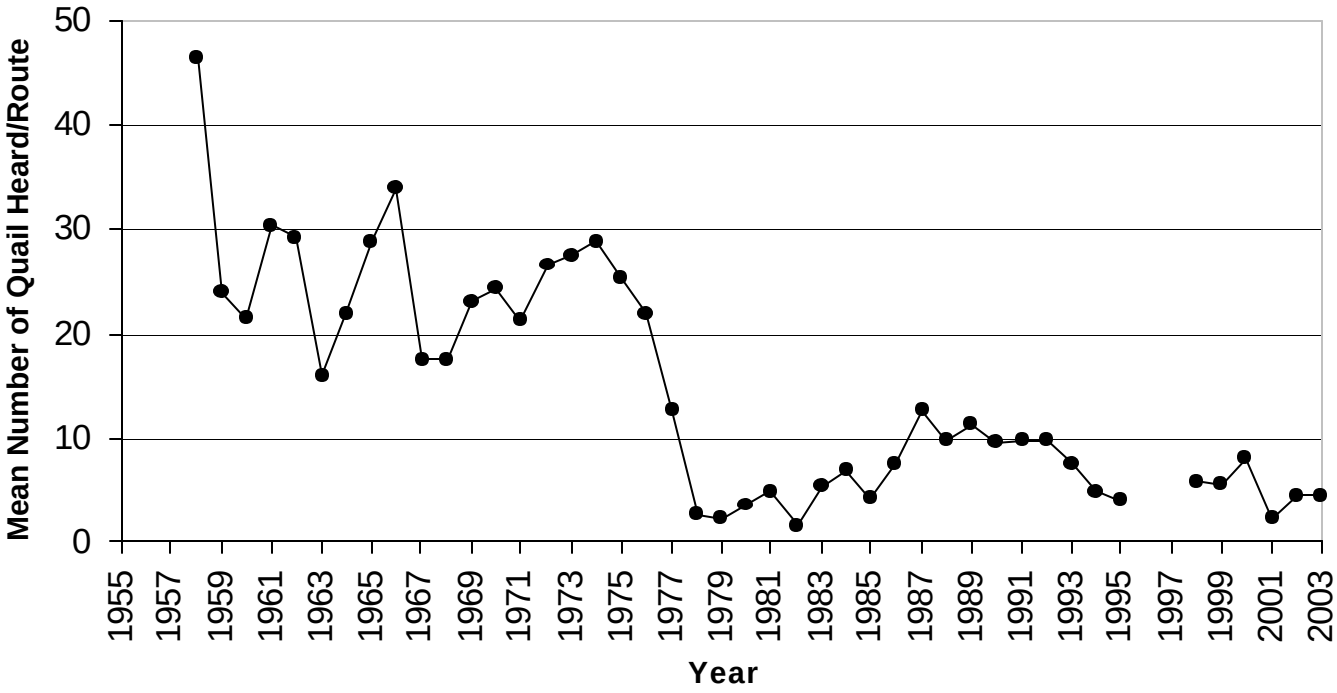


Figure 2. Bobwhite quail whistling indices in Michigan, 1958-2003.

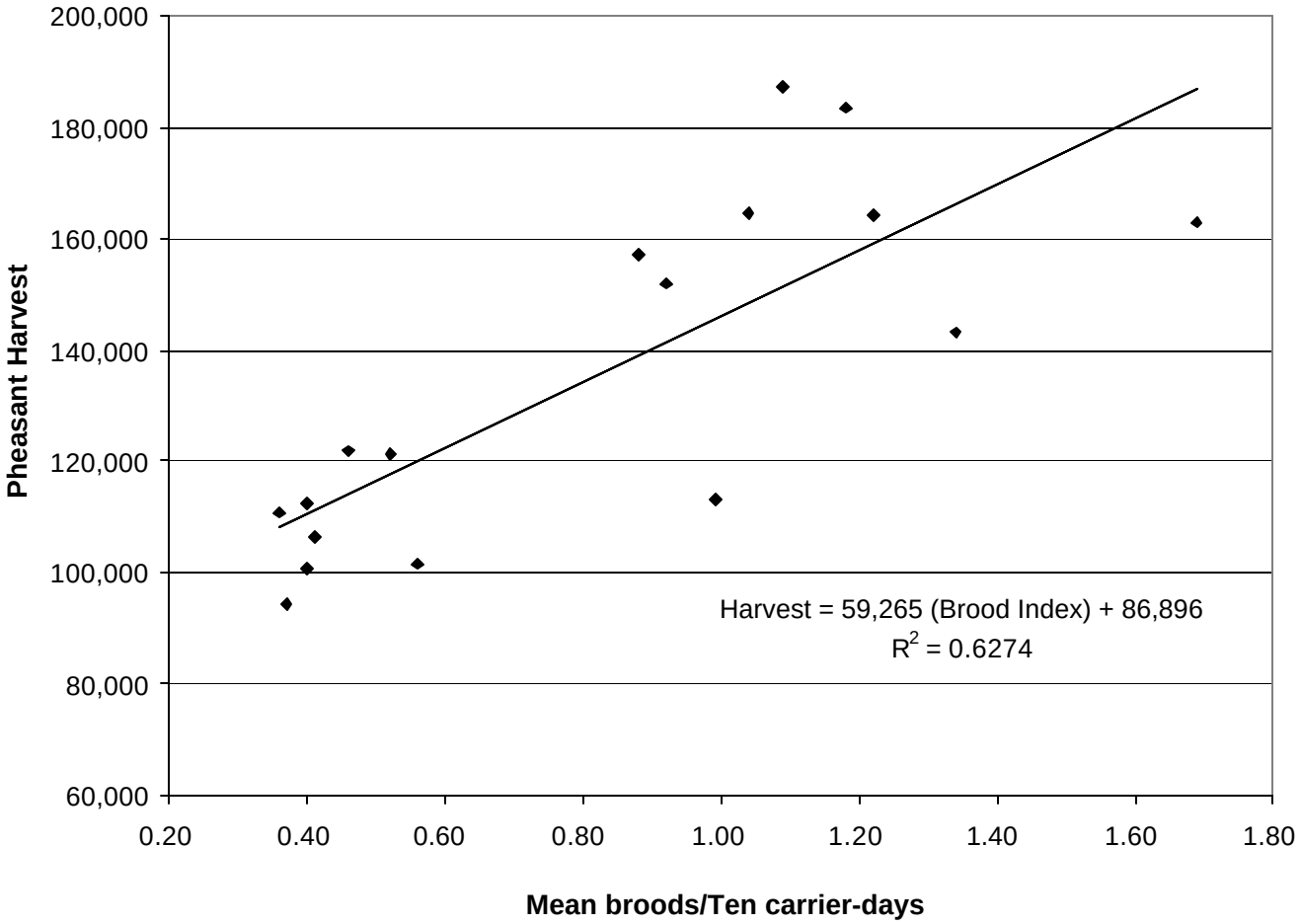


Figure 3. Relationship between regular season pheasant harvest and mail carrier brood indices, 1985-2002. Pheasant harvest was estimated from mail surveys sent to randomly selected hunters after the end of small game hunting seasons. No harvest estimate was available for 1984. The harvest estimate for 1986 was considered an outlier and therefore excluded from analysis. The estimate for 1986 was about 30% lower than the estimates for 1985 and 1987, while the brood index increased each year from 1985-1987.

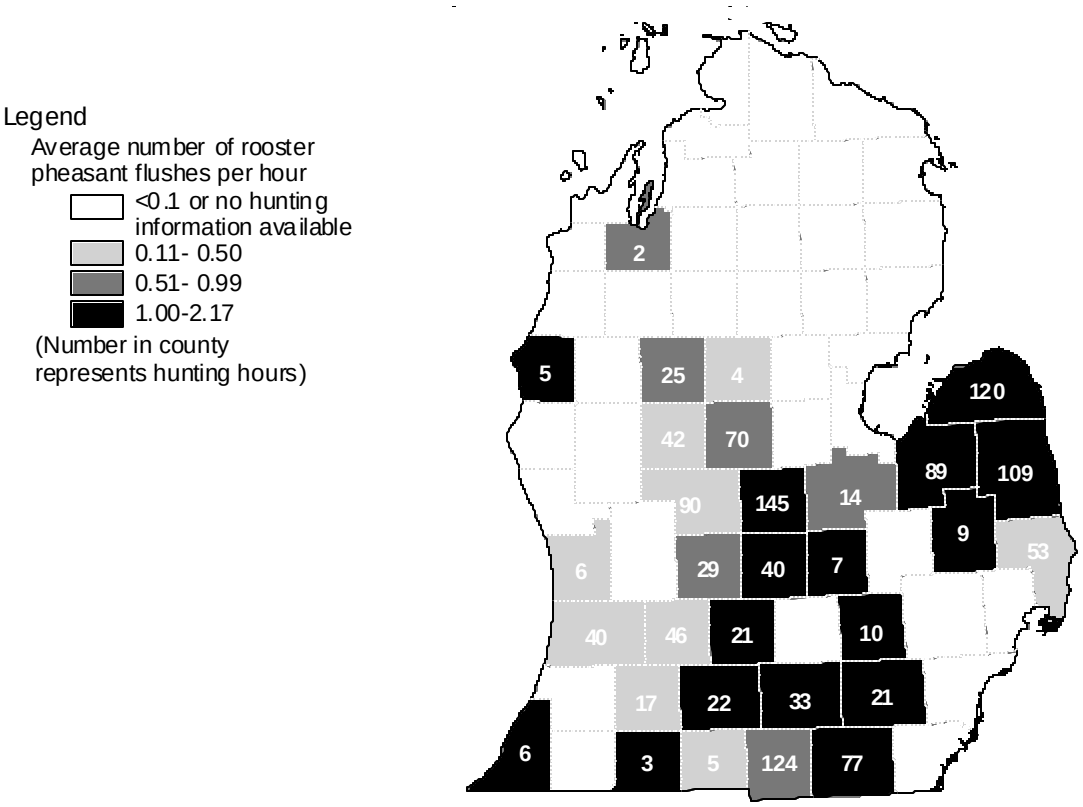
Table 1. Quail whistling survey indices in Michigan counties, 1990-2003. Index is quail heard per route. Surveys were not conducted in 1996 or 1997.

County	1990	1991	1992	1993	1994	1995	1998	1999	2000	2001	2002	2003	1990-2003 Average
Allegan	0	0	0	0	0	0	0	0		0			0.0
Barry	2	2	3	0	0	0			0	0			0.9
Berrien	1	0	3	0	0	0	3	0			0		0.8
Branch*	15	15	21	13	8	2	8	7	0	0		0	8.1
Calhoun*	12	15	13	12	9	17	9	16	7	4	8	3	10.4
Cass	0	0	0	0	0	0	0	0		0			0.0
Clinton*	2	2	2	2	1	0	2	0	2	0	0	0	1.1
Eaton*	4	14	14	3	0	0	1	2	12	1	4	1	4.7
Genesee*	12	11	10	7	0	0	3	1		3	1	1	4.5
Gratiot*	2	2	5	1	2	0	9	18	0	2	0	0	3.4
Hillsdale*	18	16	8	6	10	5	8	8	13.5	1.5	1.5	12	9.0
Huron	4	1	11	5	0	0	0	0	1.5	2	0		2.2
Ingham*	14	11	13	11	4	6	16	16	9	0	1	4	8.8
Ionia	0	0	2	5	0	0	1	1	0	3		11	2.1
Jackson*	14	15	23	15	4	6	8	7	4	2	3	3	8.7
Kalamazoo	3	4	12	5	6	1	3	0	3	0			3.7
Kent	1	0	3	0		0	0	0		0			0.5
Lapeer*	13	12	12	5	7	4		0	1	0	2	2	5.3
Lenawee*	9	15	24	8	15	4	20	13	17	10	15	3	12.8
Livingston*	8	9	10	6	9	6	12	2	5	1	2	1	5.9
Macomb*	9	24	7		6	9	4	1	3	1	1	3	6.2
Monroe*	4	10	15	16	2	12	8	1	2	1		3	6.7
Montcalm	2	10	15	21	2	0	1	5	1	2	5	5	5.8
Muskegon	0	0	0	0		0	0			0			0.0
Oakland*	14	2	0	0	0	0			0		0		2.0
Ottawa						0							0.0
Saginaw*	7	8	11	23	7	1	1	12	5	0	2	5	6.8
Sanilac*	42	18	7	14	8	4	15	8	14	1	4	3	11.5
Shiawassee*	11	18	13	7	3	4	6	11	8	3	2	6	7.7
St. Clair*	44	41	22	25	18	32	20	21	42	19	44	24	29.3
St. Joseph	14	15	12	12	5	0	2	1	2	1	6		6.4
Tuscola*	14	15	13	7	6	1	6	1	13	6	4	4	7.5
Van Buren	0	0	0	0	0	1	0	0		0			0.1
Washtenaw*	15	11	13	11	12	8	11	15	16	3		4	10.8
Wayne*	12	12	14	9	12	14	4	2	32	2	1	3	9.8
MEAN	9.47	9.65	9.74	7.55	4.88	3.91	5.84	5.45	7.89	2.14	4.63	4.39	6.3

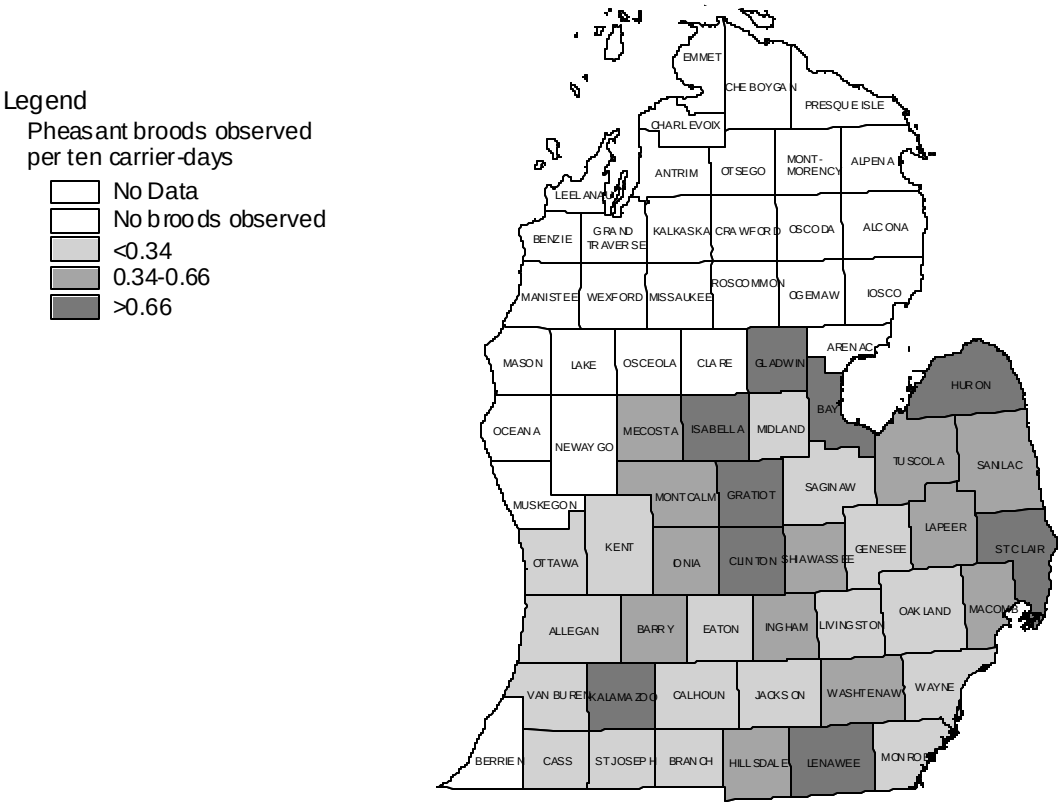
*Bulleted counties represent 22 core counties referenced in text.

Table 2. Counties open to quail hunting in 2003.

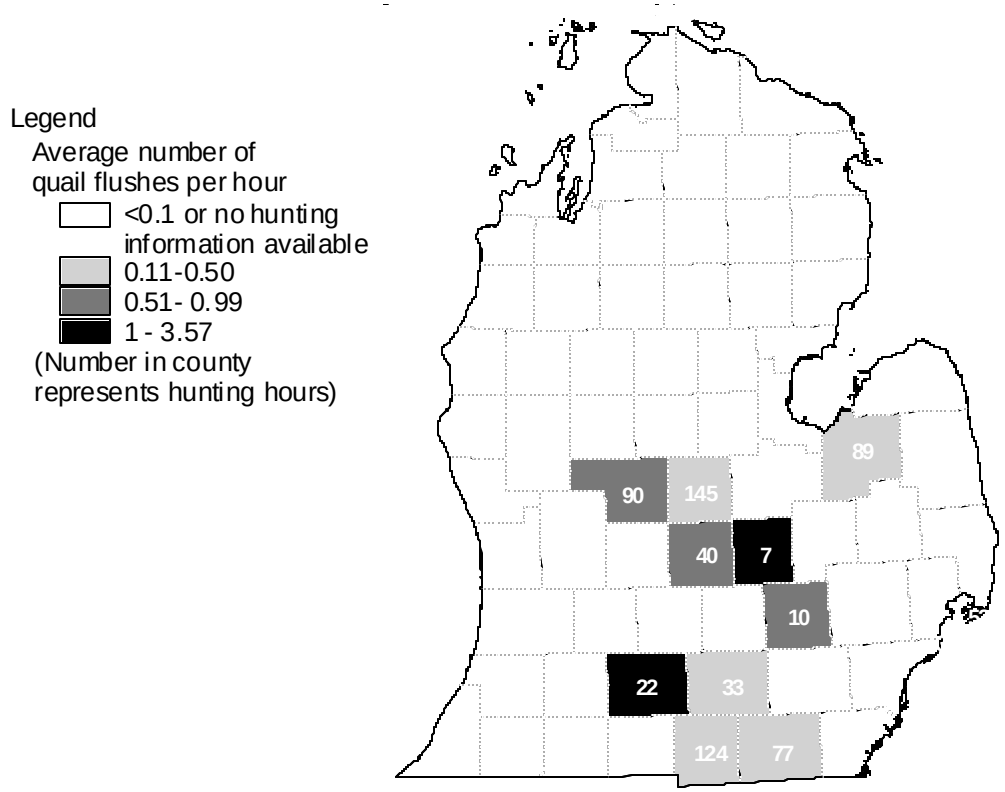
Branch	Gratiot	Jackson	Macomb	St. Clair	Washtenaw
Calhoun	Hillsdale	Kent	Monroe	St. Joseph	Wayne
Clinton	Huron	Lapeer	Montcalm	Sanilac	
Eaton	Ingham	Lenawee	Oakland	Shiawassee	
Genesee	Ionia	Livingston	Saginaw	Tuscola	



Appendix A. Average number of rooster pheasants flushed per hour by cooperators, 2002.



Appendix B. Pheasant mail carrier brood indices for Michigan counties, 2003.



Appendix C. Average number of quail flushed per hour by cooperators, 2002.